

Indecisiveness: Measuring Individual Differences With Mouse Tracking Software

An Honors Thesis (Psys 499)

by

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Abstract

Indecisiveness is often described as a person's difficulty making decisions. Much of indecisiveness research has focused on career indecisiveness, however, the trait can be manifested in any situation in which a decision must be made. There is little research demonstrating the effect of indecisiveness on basic decision-making processes. Frost and Shows (1993) created one operational definition of indecisiveness and corresponding self-report measure. The present study attempted to validate Mousetracker as a measure of indecisiveness by examining both individual and situational differences. Participants completed Frost and Shows (1993) measure of indecisiveness and indicated preferences for various stimuli using a cursor-tracking program. The study did not find an expected correlation between Frost and Shows' scale and Mousetracker measures, but did find that situational factors elicit varying levels of indecisiveness.

Acknowledgements

I would like to thank Dr. Thomas Holtgraves for advising me throughout the process of developing and conducting this research, as well as Kyle Buck and Dr. Paul Biner for their invaluable input.

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Abstract

Indecisiveness is often described as a person's difficulty making decisions. Much of indecisiveness research has focused on career indecisiveness, however, the trait can be manifested in any situation in which a decision must be made. There is little research demonstrating the effect of indecisiveness on basic decision-making processes. Frost and Shows (1993) created one operational definition of indecisiveness and corresponding self-report measure. The present study attempted to validate Mousetracker as a measure of indecisiveness by examining both individual and situational differences. Participants completed Frost and Shows (1993) measure of indecisiveness and indicated preferences for various stimuli using a cursor-tracking program. The study did not find an expected correlation between Frost and Shows' scale and Mousetracker measures, but did find that situational factors elicit varying levels of indecisiveness.

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Indecisiveness: Measuring Individual Differences With Mouse Tracking Software

From the life altering to the mundane, most people have trouble making decisions at one time or another. However, some people - termed indecisives - have chronic difficulty making decisions and experience negative affect when making choices and experience higher indecisiveness (Shenhav & Buckner, 2014). Indecisives take longer to make decisions and tend to postpone them (Di Fabio, Palazzeschi, Asulin-Peretz, & Gati, 2013; Spunt, Rassin, & Epstein, 2009). It is important to note that indecision is a temporary state, while indecisiveness is defined as chronically experienced indecision in all areas (Rassin, Muris, Franken, Smit, & Wong, 2007). Indecisiveness is studied most widely in vocational psychology and has only been established as an area of research in the last 20 years (Di Fabio et al, 2013; Frost & Shows, 1993). As a result, there is little research on how indecisiveness affects basic decision-making processes.

John Freeman's MouseTracker software allows researchers to track the cursor movements of participants (Freeman, 2014). This relatively recent creation has allowed researchers to investigate the mental processes like those involved in arithmetic, however the software has not yet been used to measure individual differences (Marghetis, Núñez & Bergen, 2014). The purpose of the present study was to examine the validity of mousetracking as a measure of indecisiveness by examining its relation to individual and situational differences.

Personality Correlates

There is very little personality theory that is directly applied to indecisiveness, however, research suggests that indecisiveness is related to several personality dimensions. First, it is well established that indecisives experience a greater amount of anxiety than decisives (Di Fabio et al,

2013; Ferrari & Dovidio, 2001). Shenhav and Buckner (2014) also demonstrate that decision-making can be a source of anxiety. This study also demonstrated a relationship between the kind of choice and the amount of anxiety experienced; win-win scenarios are shown to be more anxiety-inducing than win-lose scenarios. In decisions, anxiety will increase with choice difficulty while positive affect will increase with expected reward. This indicates a positive correlation between anxiety and indecisiveness.

Early researchers equated indecisiveness to obsessive-compulsive disorder (Frost & Shows, 1993). Indecisiveness was one of the diagnostic criteria in the DSM IIIR for obsessive-compulsive personality disorder, however, this criteria was no longer used as of DSM-IV (APA, 1987). Indecisiveness is also positively correlated with a measure of neuroticism (Jackson, Furnham). These correlations are often used to explain indecisive behavior. Early theorist Straus (1948) believed this relation to be due to a fear of making mistakes and a need to control one's environment (as cited in Frost & Shows, 1993). This implies that indecisiveness is also closely related to perfectionism (Frost & Shows, 1993).

A negative correlation has been observed between emotional intelligence and indecisiveness (Di Fabio et al, 2013). Emotional intelligence indicates an individual's ability to understand the feeling of oneself and others. The relationship between emotional intelligence and indecisiveness can be understood as an indecisive's inability to indicate his or her own preferences (Di Fabio et al, 2013). This implies that indecisives will have difficulty indicating preferences.

Cultural Perceptions of Indecisiveness

It appears that much of the literature discussing indecisiveness focuses on identifying the trait in maladaptive behaviors (Spunt et al., 2009). This may mislead researchers into identifying

indecisive behaviors too narrowly and subsequently limit measures of indecisiveness. Yates et al. (2010) found that in collectivist cultures indecisiveness is viewed more positively, while decisiveness is viewed as less positive. In Japan, indecisiveness is often viewed as deliberate and careful, while the opposite is seen as irresponsible. This indicates that not all people perceive indecisiveness the same way and that searching for maladaptive behaviors may bias the measurement of indecisiveness. Specifically, it is possible that this may lead to anxiety and neuroticism confounding indecisiveness.

Cognition

Ferrari and Dovidio (2001) suggest that indecisives use more cognitive resources to make decisions, leading to postponement of decisions and a narrower focus on information searching. Ferrari and Dovidio demonstrated this by giving indecisives and decisives a decision task while increasing cognitive load with various memorization tasks depending on the condition. The researchers found that, as cognitive load increases, indecisives tend to narrow their search to a single dimension of information whereas decisives utilized an inter-dimensional search pattern. In other words, indecisives would narrow their search and would not weigh or consider other dimensions. This suggests that indecisives compensate for an inefficient use of cognitive resources by using a search style that requires fewer cognitive resources.

Others attribute this increased cognitive load to an indecisive's inability to make timely decisions, however Ferrari and Dovidio (2001) were surprisingly unable to find a significant difference in response time as a function of the degree of indecisiveness. Self Consciousness and self-awareness are positively correlated with indecisiveness, but Ferrari and Dovidio did not find that self-awareness and self-conscious participants took more time to complete the task. In addition, these participants did not utilize significantly different search patterns.

While there is currently no research that attempts to investigate indecisiveness using mousetracker software, eye tracker technology has been used to measure indecisives' informational search patterns. Palatano, Juhasz, and Dicke's (2010) purpose was to show that because indecisives desire more information before making decisions they tend to deliberate longer on a decision but later shift to more urgent decision-making styles. The study provided participants with five academic courses that they could choose from. Information about these courses was arranged in a grid of information cells. The researchers hypothesized that indecisives would spend more time considering alternative courses when there was no urgency.

Patalano et al. (2010) found no difference between indecisives and decisives in time spent looking at courses other than the one picked, regardless of urgency. The study did find that indecisives took more time to consider each attribute, but that urgency increased the speed at which indecisives shifted focus on a choice's attributes. Decisive individuals shifted focus on attributes at a more consistent rate. The study also found that decisives focused more of their time on a single attribute of the response options whereas indecisives divided their attention equally between three attributes. Finally, the study found that indecisives spent a greater amount of time looking at cells that contained no information.

Motor Response

Freely available mouse tracking technology is relatively new to the field of psychology. Because motor responses have been traditionally viewed as the result of cognition, it was believed that studying motor responses could provide nothing meaningful about cognitive processes (Freeman, Dale, & Farmer, 2011). Instead, perception was the preferred method of observing cognitive processes, explaining the wider use of eye tracker technology in indecisiveness research (Patalano et al., 2010). There is research, however, showing that

cognition continuously informs movement (Goodale, Pelisson, & Prablanc, 1987). Mouse tracking software provides a large and continuous amount of data on participants' commitments to different response alternatives over time by tracking cursor movement (Hehman, Stolier, & Freeman, in press).

Early MouseTracker studies were often designed to measure classification cognitions. Dale, Kehoe, and Spivey (2007) investigated how atypical exemplars activated incorrect categories more often than prototypical exemplars. The researchers found, for example, that participants experienced difficulty when categorizing whales as mammals. The study also utilized a remote eye tracker to measure eye movements simultaneously with cursor movement, allowing the researchers to examine both perception and motor response.

The Present Research

The present study attempted to validate Mousetracker as a behavioral measure of indecisiveness using Frost and Shows' (1993) self-report measure of indecisiveness as well as how it varies as a function of situational differences (Approach-Approach, Avoid-Avoid, and Approach-Avoid). Frost and Shows (1993) reliably measured indecisiveness on a continuous indecisiveness scale using a 15-item survey. The authors provided a great amount data regarding reliability and validity, which made it the foundation of much later research. I expected participants' score on Frost and Shows' measure of indecisiveness to positively correlate to measures of indecision on Mousetracker (e.g. X-flips, Response Time, and Maximum Deviation). I expected this relationship to persist across all MouseTracker trials. I also expected that Avoid-Avoid trials (trials in which participants are presented only aversive stimuli) would elicit the highest Mousetracker measures of indecisiveness whereas Approach-Avoid trials would elicit the lowest.

Method

Participants

Twenty-four participants were recruited from the Department of Psychological Science subject pool and were given one research credit for participating. Participants were predominantly female ($n = 21$), students, and ages 18 to 22.

Materials

Survey. Participants completed a 15-item (e.g. *I try to put off making decisions*) survey measuring indecisiveness (Frost & Shows, 1992). All items will use a five-point Likert scale (1 = *Strongly disagree*, 5 = *Strongly agree*).

Mousetracker. The participants were administered a mouse tracking test that was designed to measure response time, movement speed, trajectory angle, and axis flips (changes in direction). Each task was either modeled in an Approach-Approach (AA), Avoid-Avoid (VV), or Approach-Avoid (AV) fashion (see Appendix for items). AA trials were those in which participants were presented with two equally approachable stimuli (hamburger or hotdog). VV trials were those in which participants were presented two equally aversive stimuli (spoiled milk or rotten meat). AV trials were those in which a clear response was expected (money or debt). All trials were presented in randomized order, and half of participants completed a reversed version of the scenario (i.e. a response that would normally be on the left was now on the right and vice versa) in order to eliminate preferences for one side. There were 28 total trials consisting of four practice trials, eight AA trials, eight VV trials, and eight AV trials. 14 trials presented pictures and 14 presented text as response options.

Procedure

Participants were first given the paper survey (Frost & Shows, 1992) and asked to read the directions and complete all items. The survey measured participants on a scale of indecisiveness. Participants then completed the mousetracking task. For this task, participants were asked to indicate their preference for one of two stimuli and were told that there were no right or wrong answers. Before beginning, participants completed four practice trials. A single mouse-tracking task involves several steps. For each trial, participants were asked to make binary decisions. Participants began each trial by moving the cursor to a “start button” located on the bottom-center of the screen and selecting it. Participants were then presented two response options at the top-left and top-right corners of the screen. Participants would use the cursor to select one of the two options and the program would record the cursor’s trajectory.

After “start” was selected and response options were given, the program began tracking cursor movement and stopped once a selection was made. Participants were instructed to begin moving the cursor immediately after “start” was selected. Participants that took longer than half of one second to begin moving the cursor were prompted by a pop-up box to begin moving sooner.

Results

Mousetracker Variables

The dependent measures analyzed in this study were Response time (RT), X-flips, Y-flips, Area Under The Curve (AUC), and Maximum Deviation (MD). For all reversed scenarios, responses were remapped in order to evaluate response trajectories consistently with scenarios that were not reversed. X-flips and Y-flips were defined as a horizontal or vertical change in direction of .05 across the Y or X axes, respectively. This is 1/40th of the screen size as

Mousetracker measures the screen from -1 on the left edge to 1 on the right, and likewise for the top and bottom edges. The monitors used in the experiment were 34.5 cm wide and 19.5 inches in height. A change in direction of .8625 cm on the X-axis and .4875 cm on the Y-axis were needed to be counted as a flip.

Both AUC and MD are ways of measuring attraction to the unchosen response. AUC was defined as the area between the idealized straight trajectory between the start button and the chosen response and a participant's actual trajectory. A positive AUC indicates that the participant strayed towards the unchosen response and a negative AUC indicates that the participant did not stray towards the unchosen response. MD was defined as the maximum distance the participant deviated away from the ideal trajectory from the start button to the chosen response. Like AUC, a positive value indicates that the participant strayed towards the unchosen response and a negative value indicates that the participant did not stray towards the unchosen response.

Indecisiveness Scale Correlations

The mean score on the indecisiveness scale was $2.65 \pm .566$. A correlation was conducted between indecisiveness scale score and each Mousetracker measures overall and for each trial type. A significant positive correlation was observed between indecisiveness and Y-flips in Approach-Avoid trials ($M = 7.13$, $SD = 1.67$), $r(24) = .43$, $p < .05$. However, no other significant correlations were observed involving indecisiveness. The expected positive correlations between indecisiveness and RT ($r = -.06$), X-flips ($r = .14$), AUC ($r = .08$), and MD ($r = .02$) were not found, $p > .1$. Refer to *Table 1* for correlations.

Table 1

Dependent Measure Correlations with Indecisiveness Scale

Condition DV	<i>M</i>	<i>SD</i>	<i>r</i>
Approach-Approach RT (ms)	1670.42	511.66	-0.03
Avoid-Avoid RT	1920.49	731.4	-0.1
Approach-Avoid RT	1602.74	345.22	-0.01
Overall RT	1731.21	516.11	-0.06
Approach-Approach X-flips	8.08	1.64	0.08
Avoid-Avoid X-flips	8.1	1.52	0.17
Approach-Avoid X-flips	8.17	1.39	0.08
Overall X-flips	8.11	1.27	0.14
Approach-Approach Y-flips	7.05	1.73	0.14
Avoid-Avoid Y-flips	7.64	1.9	0.24
Approach-Avoid Y-flips	7.13	1.67	.43*
Overall Y-flips	7.27	1.53	0.31
Approach-Approach AUC	1.05	0.94	0.05
Avoid-Avoid AUC	1.72	1.13	-0.03
Approach-Avoid AUC	1.22	0.82	0.22
Overall AUC	1.33	0.844	0.08
Approach-Approach MD	0.494	0.351	-0.02
Avoid-Avoid MD	0.7	0.314	-0.06
Approach-Avoid MD	0.591	0.304	0.13
Overall MD	0.595	0.282	0.02

N = 24 for all correlations

** significant at the .05 level*

Mousetracker Variables as a Function of Trial Type

Reaction Time. The mean RT per trial was $1731.21 \text{ ms} \pm 516.105 \text{ ms}$. Each DV was analyzed separately with a one way Analysis of variance (ANOVA). A one-way repeated measures ANOVA found a significant difference in RT as a function of condition, $F(1.27, 29.14) = 11.51, p < .01, \eta^2 = .334$. Mauchly's test of sphericity was significant, df adjusted to 1.27 and 29.14. A Bonferroni pairwise comparison found that Avoid-Avoid trials ($M = 1920.49$) had a significantly higher RT than Approach-Approach ($M = 1670.42, p < .01$) and Approach-Avoid trials ($M = 1602.74, p < .01$). Approach-Approach and Approach-Avoid trials were not significantly different in RT, $p > .1$.

X-flips. The mean X-flips per trial were 8.11 ± 1.269 . A one-way repeated measures ANOVA did not reveal any significant differences between Approach-Approach ($M = 8.08$), Avoid-Avoid ($M = 8.10$), and Approach-Avoid trials ($M = 8.17$) in number of X-flips, $F(2, 46) = .05, F < 1$.

Y-flips. The mean Y-flips per trial were 7.27 ± 1.534 . A one-way repeated measures ANOVA revealed no significant differences between Approach-Approach ($M = 7.05$), Avoid-Avoid ($M = 7.64$), and Approach-Avoid trials ($M = 7.13$) in number of Y-flips, $F(2, 46) = 2.10, p > .1$.

Area Under The Curve (AUC). The mean AUC per trial was $1.33 \pm .844$. A one-way repeated measures ANOVA showed a significant difference in AUC as a function of condition, $F(2, 46) = 8.24, p < .01, \eta^2 = .264$. A Bonferroni pairwise test showed that Avoid-Avoid ($M =$

1.72) trials had significantly higher AUC than Approach-Approach ($M = 1.05, p < .01$. and Approach-Avoid trials ($M = 1.22, p < .05$). Approach-Approach trials and Approach-Avoid trials were not significantly different from each other, $p > .1$.

Maximum Deviation (MD). The mean MD per trial was $.60 \pm .282$. A one-way repeated measures ANOVA showed a significant difference in MD as a function of condition, $F(2, 46) = 6.84, p < .01, \eta^2 = .229$. A Bonferroni pairwise test showed that Avoid-Avoid ($M = .70$) trials had significantly higher MD than Approach-Approach trials ($M = .49$), $p < .01$. AV trials ($M = .59$), did not significantly differ from Approach-Approach or Avoid-Avoid trials ($p > .1$). Refer to *Table 2* for details.

Table 2

One-way repeated measures ANOVAs for each dependent measure across trial types

	Approach-Approach		Avoid-Avoid		Approach-Avoid	
DV	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
RT	1670.42 ^a	511.66	1920.49 ^b	731.39	1602.74 ^a	345.22
X-flips	8.08	1.64	8.1	1.52	8.17	1.39
Y-flips	7.05	1.73	7.64	1.89	7.13	1.67
Area Under the						
Curve	1.05 ^a	0.944	1.72 ^b	1.13	1.22 ^a	0.823
Maximum						
Deviation	0.494 ^a	0.351	0.701 ^b	0.314	0.591 ^{ab}	0.304

Means that share a superscript in common were not significantly different across trial-type

General Discussion

The present study attempted to validate Mousetracker as a behavioral measure of indecisiveness examining both individual differences (Frost and Shows' (1993) self-report measure of indecisiveness) and situational differences (Approach-Approach, Avoid-Avoid, and Approach-Avoid). Frost and Shows' scale was found to be very reliable (Cronbach's alpha .87) and is largely based on the operational definition that indecisiveness is the time it takes to make a decision. The present study was unable to support this relationship between indecisiveness and RT.

Individual Differences

The present study predicted a significant positive correlation between indecisiveness scale and Mousetracker measures. With the exception of Y-flips on Approach-Avoid (AV) trials, this was not supported. Previous research has used response time as an operational definition of indecisiveness (Frost & Shows, 1993; Ferrari & Dovidio, 2001). However, similar to Ferraro and Dovidio, the present study found no correlation between RT and indecisiveness.

The correlation between the indecisiveness scale and Y-flips on AV trials demonstrates that highly indecisive participants made more vertical changes in direction (likely moving away from response options) than participants lower in indecisiveness. Consider that a participant were to move toward an aversive stimulus on an AV trial and then change his or her mind. This should result in either an X-flip (moving towards the opposing approachable response) or a Y-flip (moving away from the considered aversive response). Because indecisives preformed more Y-flips in these trials, it is possible that highly indecisive participants considered each response individually rather than as a whole. This conclusion would support Ferrari and Dovidio's (2001) finding that indecisives search for less information when under a high cognitive load such as

Mousetracker. However, it does conflict with Palatano's et al. (2010) findings that indecisives consider more characteristics when making decisions. Mousetracker requires participants to move the cursor immediately and make decisions quickly, possibly causing participants some degree of anxiety. This anxiety may be responsible for these Y-flips as well as the uniform response time.

The insignificant correlations between indecisiveness and the remainder of the mousetracker measures may be due to the wide variability in participant mousetracker response styles. It was observed that some participants moved the cursor off of the start button and paused in the center of the screen while making a decision. In contrast, some participants had difficulty getting the cursor off of the start button within 5000 ms and became flustered after being repeatedly prompted by the program to move more quickly. This resulted in many participants answering far more quickly than normal and occasionally selecting the aversive response in an AV trial. One participant responded to each trial by casually moving her cursor in a circular pattern towards her desired response, resulting in meaningless X-flips and Y-flips. With such varied responses, it seems unreasonable to expect accurate inferences between subjects.

Situational Differences

The present study also predicted higher mousetracker measures of indecisiveness for Avoid-Avoid (VV) trials and lower measures for AV trials. This hypothesis was supported with the exception of X-flips (horizontal changes in direction) and Y-flips (vertical changes in direction), which did not differ across trial types. Additionally, AV trials did not elicit significantly lower indecisiveness than Approach-Approach (AA) trials in any category. Considering AV trials were designed to elicit the least indecisiveness, this is surprising. It is possible that indecisiveness is better predicted by the presence of aversive stimuli than choice

difficulty. MD and AUC were significantly higher in VV trials, demonstrating that participants were more likely to consider both responses when they were aversive.

There were some unexpected response patterns in regard to trial types. One trial, “Hot or Cold” was intended to be a VV trial, however, participants largely chose hot over cold. Likewise, in an AV trial, “Running” and “Resting” were chosen roughly an equal amount of times. This implies that not all trial types elicited the intended effect, which may have confounded the results.

Future Research

Future research should take care to pilot test trial stimuli in order to correctly establish conditions. Frost and Shows (1993) scale of indecisiveness was shown to be a highly reliable measure. Other measures should be tested with Mousetracker in additional efforts to ascertain construct validity for the software. It is possible that measures of indecisiveness that do not search only for maladaptive behavior may reveal more dimensions of indecisiveness and serve to separate neuroticism as a confounding variable. Special care should be taken to create comprehensive and uniform directions for Mousetracker scenarios that reduce unnecessary response variance and confusion. Additionally, future research may place special consideration on the allowable time that the participant may remain on the start button in order to reduce frustration. This reduced frustration should reveal different response styles in highly indecisive individuals than what were found in the present study.

The current study attempted to validate Mousetracker as a measure of indecisiveness both between subjects and within subjects and across trials. The study’s ability to demonstrate Mousetracker’s validity as a measure of indecisiveness within subjects was met with only minor limitations. However, Mousetracker’s validity as a measure of individual differences is still

inconclusive. This remains an important concern if there is to be any hope of establishing construct validity for Mousetracker.

Appendix

Study Description

In this study, you will complete a short survey measuring decision-making. You will also complete a set of computer-based trials that will ask you to select words and pictures based on your preferences. The study's purpose is to investigate how people make decisions. The software is designed to track your cursor's movements.

Frost & Shows (1993) Survey

Participants indicate on a 5-point Likert scale the extent to which they agree or disagree with the following statements. (1 = Strongly Disagree, 5 = Strongly agree).

Directions:

“The following is a measure of decision making styles. Please indicate how strongly you agree or disagree with the following statements. “

I try to put off making decisions.

I always know exactly what I want.

I find it easy to make decisions.

I have a hard time planning my free time.

I like to be in a position to make decisions.

Once I make a decision, I feel fairly confident that it is a good one.

When ordering from a menu, I usually find it difficult to decide what to get.

I usually make decisions quickly.

Once I make a decision, I stop worrying about it.

I become anxious when making a decision.

I often worry about making the wrong choice.

After I have chosen or decided something, I often believe I've made the wrong choice or decision.

I do not get assignments done on time because I cannot decide what to do first.

I have trouble completing assignments because I can't prioritize what is most important.

It seems that deciding on the most trivial thing takes me a long time.

Mouse-tracking stimuli

Directions 1: (Shown onscreen prior to beginning practice trials)

“The following is a measure of decision making processes. Each time you select “start” you will be presented with two options. Please select the option that you most prefer. You will be given several practice questions before you begin the study. Press enter to continue.”

Directions 2: (Shown onscreen after practice trials but before study)

“You have completed the practice questions. You will now be presented with more sets of pictures and words. Please select whichever you prefer as honestly as possible. Press the “enter” key to begin the study”

If the participant does not move the mouse quickly enough they will be given the following message after their selection:

“Please start moving earlier on. Even if you are not sure of a response yet.”

Items were presented in this order, but every other participant received a reversed version.

Practice Questions

PBurgerdog

Hotdog

Pashapes



PNoise

Car Alarm

Part



Approach-Approach

AAInstrument

Guitar

Aaapples

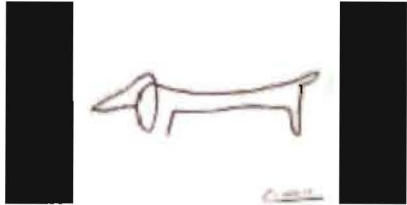
Apples

AAEggs

Hamburger



Barking



Piano

Grapes



AAClothes

Jacket

AAVases



Aapet



AAHeadphones



Aatoothpaste

Colgate

Avoid-Avoid

VVRat



VVAlarm

Fire Drill

Vvcut

Paper-cut

VVHeat



Hoodie



Crest



Tornado Drill

Hangnail

Hot
VVD



Cold



VV



VV



VV
Study

Work

Approach-Avoid

AV



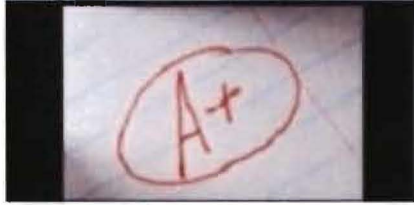
AV



AV



AVgrades



AVmoney

Money

Debt

AVactivity

Taxes

Television

AVvacation

Vacation

School

AVrelax

Running

Resting

Debriefing

Great job!

You have completed the study.

The study's purpose was to measure indecisiveness and to observe this trait using MouseTracker software to track cursor movements. If you have any further questions, you may contact one of the following:

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If you would like to seek counseling you may contact the counseling center

Counseling Center
Lucina Hall, Room 320
765-285-1736
counselctr@bsu.edu

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